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SOVIET CONSTRUCTION

NO. 14

SELECTED TRANSLATIONS

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Introduction

This is a serial publication containing selected translations on construction in the Soviet Union. This report contains translations on subjects listed in the table of contents below.

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1. New Building Materials

/This is a translation of an article written by A. Birkengof in Sel'skoye Stroitel'stvo (Rural Construction), No. 4, April 1960, page 21./

At the Exposition of Achievements of the National Economy of the USSR the Section of "Construction" exhibits many effective industrially produced building materials which can be successfully applied in rural construction.

They include vinyl-polychloride linoleum fabricated from synthetic resins with fillers (talcum, pigments, etc.). This linoleum is manufactured in the form of panels or strips of a dark-brown color measuring 12-15 meters in length, 1-1.6 meters in width and 2-2.5 mm in thickness, and it displays a low water absorption (three to five percent) and a high wear resistance.

A jute-base linoleum is manufactured by the Mytishchi Plant of the Mosgorispolkom /Executive Committee of the M scow City Soviet of Workers' Deputies/. It costs 22 rubles a square meter.

A base-lacking vinyl polychloride linoleum is manufactured by the Kiev Construction Industry Combine. It costs 16 rubles a square meter.

That linoleum is used as a flooring material for residential and civic buildings, and its use accelerates the conduct of flooring work fivefold or sixfold compared with the use of deal-board floors.

It is also possible to use for the same purposes the NLG-grade nitrolinoleum (notrocellulose linoleum). It is constituted by a noncombustible plastic, and it displays low water absorption and high wear resistance. This material is manufactured by the Permskiy Sovnarkhoz in rolls of dark-brown color measuring 10-12 meters in length, 0.9-1.2 meters in width, and 1.8-2.5 mm in thickness. It costs 28 rubles a square meter. At present the manufacture of an experimental lot of such linoleum in various colors is under way.

Of interest is the semi-rigid mineral-wool board designed for the heat insulation of partitioning structures (walls, floors) and pipes as well, and for use as fillers in rolled reinforced concrete wall panels.

This board has a volume weight of from 300 to 500 kilograms a cubic meter, a heat conduction coefficient of 0.065 to 0.085, and a high wear resistance.

This board is manufactured in units measuring 50x50 cm

with deviations of plus or minus one centimeter. Its thickness ranges from five to 10 cm. at one-centimeter intervals (i. e., five, six, seven, eight, nine, and 10 cm.).

This board is manufactured by the Moscow Mineral-Wool Products Plant of the Glavmospromstroymaterialy /Main Moscow Administration of Building Materials Industry/. Its sales price is 123 rubles a cubic meter.

The Exposition also shows ceramic tiles for mosaic floors; these tiles are manufactured from a clay mass that is roasted until sintered, with coloring admixtures (red, yellow,gray, black).

The tiles are designed for constructing mosaic floors in the lavatory units of residential and civic buildings, public baths, and other premises; the thinner (four mm thick) tiles are designed for facing buildings.

The tiles measure: for flooring -- 48x48x6 mm, and for facing buildings -- 48x48x4 mm; their water absorption reaches four percent (flooring tiles) and 10 percent (facing tiles). They seldom wear out.

The tiles are manufactured by the Guchkovskiy Ceramics Plant of the Glavmospromstroymaterialy.

Of interest is the honeycomb-type gypsum board manufactured of gypsum with wooden or fibrous additions /coatings/ and designed for constructing internal partitions in residential buildings, schools, hospitals, etc.

Standard board pieces are joined in a vertical position by mortise and tenon, and the resulting joints are sealed with gauze and plastered with gypsum. The partitions are paintable without a special preparation of the surface. The board is easily sawn.

A standard board piece measures 270-300x60x10 cm, weighs 80-110 kg, and has a volume weight of 600 kg a cubic meter.

This board is manufactured by the Pavshinskiy Dry Gypsum Plastering Plant of the Glavmospromstroymaterialy. It costs 18 rubles 50 kopeykas a square meter.

Two types of reinforced concrete tube for laying subterranean conduits are manufactured: centrifuged, measuring 400-1,190 mm in diameter and as many as five meters in length, manufactured by the Moscow Reinforced Concrete Pipe Plant of the Glavmospromstroymaterialy in Fil'ye; and vibrated, measuring 1,500 mm in diameter and four meters in length, manufactured by the Reinforced Concrete Products Plant No. 15 of the Glavmospromstroymaterialy.

2. Immediate Tasks in the Development of the Soft Roofing Industry

/This is a translation of an article written by V. G. Fel'zenbaum and E. P. Yefimova in Stroitel'nyye Materialy (Building Materials), No. 4, April 1960, pages 3-6./

Bituminous or, as they are conventionally termed, soft roofing materials (Ruberoid, tar paper, pergamyn), have hitherto occupied an unjustifiably small place in the general balance of the roofing materials applied in our country.

Soft roofing is used quite widely in industrial construction (as a waterproofing layer in the roofs of buildings, structures, depots, etc.). About 80 percent of the total area of industrial roofing is constructed of Ruberoid, pergamyn or tar paper. On the other hand, in housing construction only five or seven percent of all roofing is constructed with these materials. A substantial amount of the industrially manufactured soft roofing is used for indirect purposes: to waterproof building foundations, window blocks and piping, and to package equipment. This is because the production of special inexpensive waterproofing materials has not as yet been established on a proper scale.

The decisions of the 21st CPSU Congress stipulate the task of changing over within the next few years to the roofing of urban buildings with heat-insulated reinforced concrete, i. e., superposed roofs.

The interim directives on the design and construction of the superposed roofs of residential and civic buildings, confirmed by the Gosstroy USSR in April 1959, provide for the exclusive use of soft (rolled) roofing materials as the waterproofing layer in such roofs.

Soft roofing displays a number of major technical and economic advantages over slate, roof tile, and other materials. The raw material for its production is constituted by petroleum bitumens obtained as by-products of petroleum refining, rags, waste paper, and wood wastes. The capital expenditures on developing the bituminous roofing industry are three or four times lower than those needed for organizing the production of slate or roof tile. The output capacity of a typical soft roofing plant in terms of roofing area is twice as high as the output capacity of a typical slate plant and exceeds 19-fold the output capacity of the largest of the planned roof tile plants (15 million tiles annually). This is of essential importance to a maxi-

mal gain of time when solving the fundamental economic task in the field of the production of roofing materials.

Table 1 cites indexes of unit over-all capital investments in the production of principal roofing materials (including expenditures on the development of the raw materials base), as we had computed on the basis of progressive plant designs. Also indicated is the roofing area provided by the various roofing materials plants.

Table 1

Type of Material	Over-All Capital Investments per 100 m^2 of Roof Projection, in rubles		Output Capacity of Typical Plant in Terms of Possible Roofing Area, in millions of m^2
	Total	in which: the Raw-Material Branches of Industry	
Soft Roofing	415	216	17.6
Slate	1,317	885	9.3
Roof Tile	1,544	--	0.9

Thus, the rapid growth of industrial construction, the transition to industrialized methods of building roofs in housing construction, the availability of a broad raw materials base, and the relatively small scale of capital investments needed for organizing the production of soft roofing materials, together dictate the necessity of accelerating the development of the roofing industry.

The Seven-Year Plan of Development of the National Economy of the USSR provides for increasing the output of soft roofing in 1965 to 1.3 billion m^2, i. e., doubling it against 1958.

A radical improvement in quality and variety of the soft roofing materials is an indispensable prerequisite for broadening their introduction in construction practice.

It has to be stated that the quality of the Ruberoid, tar paper and pergamyn manufactured by the roofing plants does not satisfy construction requirements with regard to

durability and external appearance.

A study of roofing stations conducted by the NIIAsbesttsement /Scientific Research Institute of Asbestos-Cement Industry/ revealed that the laid soft roofing of various types and grades begins to disintegrate after two to four years of exploitation. These facts, indicative but nevertheless isolated, cannot naturally serve to deduce broad generalizations about the service life of roofing materials. Nonetheless, they evidence that in a number of cases the service life of soft roofing materials is extremely short.

The principal causes of this lie in the insufficient thickness of the coating layer of bitumen, and a poor impregnation of tar paper which is partly related to its low quality.

It was established that an increase in the thickness of the coating layer prolongs its aging. Now that the roofing industry has begun to receive the BN-VK grade special bitumen with a lower brittling temperature, it is feasible to increase considerably the thickness of the coating layer (to 700-1,000 grams per m^2) without detriment to the flexibility of material at low air temperatures.

...The various suggestions regarding a radical improvement in the quality of the output of the roofing industry have been hitherto encountering objections based on the higher production costs which this would incur. In effect, the increased rate of bitumen consumption, the use of fillers, and the installation of additional trimming equipment may result in increasing the production costs of soft roofing by approximately 15 percent. However, this could be largely compensated by reducing the expenditures on fibrous raw materials for tar paper and by the mechanization of production processes.

It should be added that even at some rise in production costs it will not be necessary to raise the sales prices of roofing materials, because by now the difference between actual production costs and current sales prices amounts to 15-20 percent. At the same time, an improvement in the quality of output will be of tremendous economic importance. Within the next few years the roofing area of industrial and residential buildings, in which soft roofing is used, will reach approximately 250 to 300 million m^2 annually. Considering that the construction of one square meter of roofing cover costs approximately 20 rubles and assuming that, as a result of the improvement in the quality of their production, the service life of roofings will be prolonged for the country as a whole by at least three years (such an assumption is by no means presumptuous), then, in view of

the present scale of the output of roofing materials, the savings in funds that would otherwise have to be expended on replacing worn roofs will total 15-18 billion rubles over that three-year period. In a number of cases the consumption of materials on the construction of roofs will also be drastically reduced. After all, at present, because of the unsatisfactory quality of soft roofing, the norms for designing superposed roofs provide for using five layers of Ruberoid and pergamyn: three for waterproofing and two for steam-proofing. Moreover, certain of the designs being drafted by project-design organizations provide for a soft roofing cover consisting of seven layers.

This is one of the reasons for the high cost of superposed roofs which, in turn, raises by approximately two to two and one-half percent the tariff cost of one square meter of dwelling area, in Moscow.

The variety of output of the roofing-industry enterprises is as yet extremely limited, and the share of the most effective types of soft roofing in its total output is definitely much too low. About 30 percent of the total output of the roofing industry is constituted by such a low-quality, shoddy material as sand-type tar paper. Not only is it not durable but also its production cost is high. Thus, e. g., 1,000 m^2 of TP-350 grade tar paper cost on the average (according to 1958 figures) 1,231 rubles /to produce/, whereas the average production cost of 1,000 m^2 of Ruberoid of a corresponding grade is 1,003 rubles.

The most durable are the armored roofing materials whose coating contains coarse-grained mineral flecks. By protecting the material from mechanical effects and from the solar radiation the coarse-grained flecking prolongs considerably its service life. Hitherto, however, armored materials have been manufactured in insufficient quantities. In the period from 1950 to 1958 the share of armored Ruberoid in the total output of soft roofings rose only from seven to 13.6 percent, while the share of armored tar paper had even decreased somewhat -- from four to 3.9 percent.

It is necessary to increase in the next few years the share of armored materials to 40-45 percent of the total output of soft roofings by curtailing drastically the production of sand-type tar paper and, partly, ordinary Ruberoid.

...Major obstacles to the development of the roofing industry are the low level of concentration of production and the still surviving relics of administrative dispersion of enterprises. Of the 57 soft roofing plants and shops registered in 1958, 42 were constituted by small enterprises having an annual output on the scale of up to 10 million m^2.

Of these, 35 enterprises were subordinated to local soviets, various ministries and agencies or included in systems of inter-industry cooperation.

...One of the principal tasks in developing the roofing industry is to improve its geographical distribution throughout the country. Such properties of soft roofing as the absence of open pores and elasticity make it possible to use it nearly universally, without any zonal restrictions whatsoever. At present, however, the enterprises of this industry are distributed very irregularly over the country's territory. Its development is particularly low in the eastern regions: in the Urals, in Siberia, Central Asia and Kazakhstan.

While in 1958 the Eastern USSR had produced 32 percent of the total national output of cement and 31 percent of the output of slate, its share in the output of soft roofing amounted to only about eight percent, which necessitates the import of a large amount of roofing materials into the eastern regions. Thus, WestSiberia in 1957 had produced 1.5 million m^2 of soft roofing but consumed 35.8 million m^2.

The regions of East Siberia were provided with 5.5 million m^2 of Ruberoid and pergamyn from Leningrad plants, shipped over a distance of 5,070 km; 4.2 million m^2 from the Kuybyshev Plant (distance: 3,520 km); and 2.5 million m^2 from the Slavyansk Plant (distance: 4,600 km.). The same plants were and are the principal suppliers of soft roofing to the Kazakh SSR.

On the whole, over 200 million m^2 of soft roofing were imported into the eastern regions in 1957. The average radius of its haul reached 1,815 km., which is several times as long as the radius of haul of cement and slate.

The unsatisfactory geographical distribution of the roofing industry is largely related to the fact that during the postwar period the production of soft roofing has been developing mainly through the expansion and more intensive utilization of the capacities of existing enterprises. In 1954 a decision was adopted for erecting within three or four years new soft roofing plants, including five in the East: in Chelyabinsk, Orsk, Omsk, Kemerovo, and Irkutsk. Unfortunately, not one of these plants was built. The Irkutskiy, Kemerovskiy and Chelyabinskiy sovnarkhozes display a one-sided interest in increasing their output of slate and do not materialize the funds assigned annually to them for the construction of the roofing plants.

And yet, in the long run the demand of these regions for soft roofing will grow more rapidly than their demand for slate, in connection with the tempestuous mushrooming of industrial construction in the East. According to the

calculations of the Department of Technical and Economic Studies of the NIIAsbesttsement, the demand of the Urals, East and West Siberia, Far East, Central Asia, and Kazakhstan, for soft roofing in 1965 will reach 530 million m^3 (or 41 percent of the total national demand), whereas the present volume of output in these regions is no higher than 50 million m^3.

All this dictates the necessity of accelerating the construction of the Chelyabinsk, Omsk, Kemerovo, Irkutsk, Pavlodar, and other new roofing enterprises and, moreover, conducting a large-scale modernization of the few such enterprises already existing in these regions.

3. Between Two (Construction Industry) Conferences

/This is a translation of an article written by A. Pozdnev in Stroitel'naya Gazeta (Construction Gazette), 17 April 1960, page 4.7

Less than four years have elapsed since builders -- production men, technologists, designers, and scientists -- from all four corners of the Soviet Union met in Sverdlovsk at the First Conference on Prestressed Reinforced Concrete. Much was then said about the planned targets, about the fulfillment of these targets (more accurately, about the reasons for their nonfulfillment) and about the prospects for new developments.

And now recently production men, technologists, designers, and scientists from 75 cities met again at a conference convened by the Scientific and Technical Society of the Construction Industry at Minsk and devoted to the same problems. However, the Minsk Conference differed from the Sverdlovsk one so much that it seemed that the object of discussions was different, that several "pyatiletkas" had elapsed in between these two conferences. So strikingly has the quantitative and qualitative aspect of the matter changed.

Let us recall that at the Sverdlovsk Conference the "best" indexes were displayed by the Ministry of Building Materials Industry, whose enterprises had produced altogether --- 25,000 m^3 of prestressed concrete products. And all the 15 coeval construction ministries and agencies had together produced 70,000 m^3. The share of these products in the total volume of output of precast reinforced concrete was so insignificant as to virtually have no effect.

Totally different indexes affected the atmosphere at the Minsk Conference. Last year Moscow alone had fabricated 800,000 m^3 of prestressed products -- 38 percent of the total volume of output of precast reinforced concrete in the Nation's Capital. The corresponding indexes at Leningrad were 140,000 m^3 or 16 percent and Belorussia -- 75,000 or 14 percent. Similar progress was made by the Ukraine, Siberia, Urals, Volga Region, and others.

The participants at the Sverdlovsk Conference mostly listened to scientific reports instead of communicating to each other about their own work. They had little to say, anyway. The necessary experience was lacking, and they had regarded the new principles of reinforcement as propects that, attractive as they were, were still far from

practical. The targets as to the output of prestressed reinforced products also seemed removed from reality at that time.

The Minsk Conference was different. There, figuratively speaking, those desirous of sharing with others their creative experience had formed a queue. And every report was another proof that the former lag had been eliminated. Builders have not only mastered the new technology but also have enriched it with many original proposals.

By the end of the seven-year period the share of prestressed-reinforced products should rise to one-fourth of the total output of precast reinforced concrete. In their speeches a number of participants proposed the re-examination and enlargement of the targets of the Seven-Year Plan. And these proposals are not wholly groundless. After all, by now many pace-setting enterprises are producing nearly one-half of their output with prestressed reinforcement!

In his opening address Professor A. A. Gvozdev pointed to a distinguishing trait of the development of this new field in the Soviet Union. In the Capitalist countries the reinforced concrete experts assert that prestressed reinforcement can be technically effective and economically expedient mainly in wide-span bridges and coatings, long masts, high towers, large reservoirs, and a small number of other engineering structures.

Such an assertion holds true for the Capitalist countries, where the absence of a common planning principle impedes the standardization and unification of structures, excludes the possibility of organizing mass production and, necessarily, predetermines the inexpediency of /maintaining/ permanent specialized plants. Abroad, small-serial of individually commissioned structures are fabricated or built mainly on open-air stands or in monolithic concrete.

In a Socialist country such contradictions cannot and do not exist. Precisely, therefore, in our country, reinforced concrete construction is substructed on a tempestuously developing industrial base, on which the mass fabrication of products is also being mastered. As soon as a new engineering idea appears, it is immediately "translated" into the language of prestressed reinforcement. Professor Gvozdev illustrated these remarks with examples of such different products as entire-room block units and grapevine props.

This idea was also confirmed by the main engineer of the "Barrikada" Plant in Leningrad, L.I. Mamontov:

"Now no one doubts any longer that the fabrication of prestressed-reinforced products, which had only recently seemed complicated and inexpedient, is actually simpler, more

expedient and less expensive than the fabrication of ordinary precast reinforced concrete."

In the Soviet Union the general trend toward industrialization displayed by the precast reinforced concrete industry is intertwined with another of its developmental traits -- mechanization and automation of production processes.

Deputy Chief Engineer of Giprostroyindustriya /All Union State Design and Planning Institute of Building Materials Industry/ A. A. Folomeyev unfolded before the Conference's participants a fascinating picture of industrial fabrication of reinforced concrete products in which the working elements are semiconductors, tensometric data transmitters, electronic units, programming devices, and automatic lines. Beginning from the preparation of the concrete mixture and ending with the inspection of finished products, all operations in such a plant are parts of a single, inseparable, automatically guided flow.

To be sure, this newest technology has not as yet been appropriated by industry. However, by now it is no longer merely a consideration of design. These new ideas are sprouting their first seeds in the production activities of a number of plants. For instance, at Moscow Plant No. 5, automation has been very effectively extended to certain technological processes of the production of multiple-cavity prestressed-reinforced slabs.

The next task is to introduce the totally automatic cycle. It is difficult to predict accurately when this will happen. But a comparison of the results of the Sverdlovsk and the Minsk conferences convinces one that at their third conference the Soviet reinforced concrete men will arrive with substantial and real achievements in the field of the automation of production.

In the Soviet Union the distinctive character of development of the technology of precast reinforced concrete is demonstrated with particular clarity by two methods which find increasingly widespread use here without as yet being emulated in any Western country. They are the methods of continuous reinforcement and electrothermal prestressing of reinforcement.

The method of continuous reinforcement proposed about ten years ago by Professor V. V. Mikhaylovksiy and serving to mechanize totally the labor-consuming processes of the straightening, placement and prestressing of reinforcement, is well-known. Its effectiveness is indisputable today. But V. V. Mikhaylovskiy's first machine -- a rotary table -- has already given birth to abundant offspring. New and very simple coiling and reeling machines have appeared since,

and these have served to expand considerably the range of applications of continuous reinforcement.

Particularly interesting and promising are the machines operating in Moscow at Combine No. 2 and at Plant No. 6, and in Berdyansk as well. They combine the continuous coiling of wire with its electrothermal prestressing. Such a combined method eliminates completely the breakages of wire, increases machine productivity, reduces energy consumption, etc.

The progressive role of the electrothermal prestressing of reinforcement was noted at the Conference literally by every speaker. As is known initially many research organizations had no faith in this method. Candidate of Engineering Sciences E. G. Ratts was right in stating that the electric heating of reinforcement did not come to industry along "a road paved with roses."

The speakers at the Conference had also noted other matters: while in the last two years the development of prestressed reinforcement in our country has made a great leap forward, the spring-board for that leap was provided precisely by the method of the electrothermal prestressing of reinforcement. We need only mention that of the 800,000 m^3 of prestressed-reinforced products fabricated last year in Moscow's plants, 750,000 m^3 were fabricated by means of electrothermal prestressing. Over 200 Soviet plants are employing this new method today.

It is a very simple method, requiring one-third of the labor required by power prestressing, and requiring equipment that is five to ten times cheaper. And, besides, the most interesting thing about this method is that it can be applied not only to hot-rolled rod-core reinforcement but also to cold-rolled wire reinforcement, despite the particularly gloomy "scientific" warnings against the application of electric heating in the latter type of reinforcement.

Rod reinforcement is the most widespread and cheapest in our country today. The effectiveness of its application is greatly increased by such measures as shaping, pre-hardening, etc. However, the Conference has unanimously supported the introduction of new types of reinforcement which, according to the communication of Candidate of Engineering Sciences K. V. Mikhaylov, promise the possibility of saving, during the seven-year period, as much as 12 million tons of metal costing nearly three billion rubles and considerably increasing the technical effect of prestressed reinforcement.

This concerns primarily high-strength wire, and, in particular, twisted spun ropes. Considerable interest was

aroused by the communication of Engineer I. S. Gaklin (Novosibirsk) about studies of two-ply steel ropes. These studies, which had proved the feasibility of a considerable simplification of production, reduction of labor input and savings of metal, had stimulated the Novosibirskiy Sovnarkhoz to commence the organization of a stand for manufacturing twisted-reinforcement yarn.

Despite the commendability of such initiative it must be noted that it reflects the traits of the "manufacturing profile" to which builders still have to resort. The production of such yarn is the business of metallurgists and not of builders. However, metallurgy either ignores the demands of builders or satisfies them poorly.

The quality of reinforcement metal -- rod and wire -- is not stable. Effective types of high-strength reinforcement are supplied in miserly quantities, and new types are not manufactured at all. The metal arriving at a construction site or plant frequently requires some additional machining or trimming. Even the requirement of delivering wire in large reels is not fulfilled.

The Conference has not overlooked other negative aspects of the development of prestressed-reinforced concrete.

Also noted was the lag in industrial construction. There exist particular cases when, under various pretexts, the sovnarkhozes prod designers to replace reinforced concrete by metal in their designs. The fact that despite the years of design and experimental work we still have not eliminated the bugs from the production of prestressed reinforced pressure pipe is a gap which cannot be tolerated to remain unfilled.

Voices from the rostrum of the Conference had repeatedly reminded that prestressed reinforcement requires high accuracy and care and that the related errors entail greater hazards than during ordinary reinforcement. Therefore, the struggle for the quality of products acquires a special importance.

On the initiative of the Odessa builders, the so-called pressurized stays have become widely applied. Being in principle an applicable and simple solution, these stays require a high accuracy, because the prestressing of the reinforcement becomes disordered if they are even a little off-centered. Professor Gvozdev warned against the removal of stays from prestressed reinforcement by shearing off their ends. Investigations showed that the attendant momentary shock spoils the concrete and disturbs the prestressing of the reinforcement.

In this light, the problem of production control and product inspection acquires a special importance. Un-

fortunately, nothing new has as yet been developed in this field, even at the pace-setting plants, aside from the archaic cubic indexes and disruption tests of sampled products.

Comrade Mamontov described the results achieved at the "Barrikada" Plant by using electronic-acoustic methods. These methods make it possible to control even such processes as the growth in the strength of concrete inside the curing chambers. Unfortunately, however, however, due attention has not yet been paid to any new physical methods.

* * *

Such, in a nutshell, are the results of the Minsk Conference on Prestressed Reinforced Concrete. This new field is undergoing a major creative expansion. Soviet builders have once again demonstrated their ability to cope with any engineering problem.

In closing the Conference, the Chairman of the Scientific and Technical Society of Construction Industry I. A. Onufriyev noted the successes achieved and appealed to builders not only to fulfil but also to overfulfil, on a high technological level, the tasks of the Party and State regarding precast and prestressed reinforced concrete.

4. Speed Up Cement Plant Construction

/This is a translation of an unsigned article appearing in Stroitel'naya Gazeta (Construction Gazette), 15 April 1960, page 2./

This year the output of cement should increase by 6.7 million tons and reach 45.5 million tons. Such an increment in this second year of the Seven-Year Plan corresponds with the pace of mean annual increment established by that Plan.

The fulfillment of this task depends not only on the collectives of cement plants. A major contribution should be made by the builders and installers erecting new enterprises, designers, and machine builders.

Last week the Construction Section of the CC CPSU held a conference regarding the introduction of new output capacities in the cement industry. The Conference's activities were participated in by heads of project-design, scientific-research and planning organizations, and heads of the enterprises and organizations supplying equipment and materials to the construction sites of the cement industry.

A communication was made by the Chief of the Building Materials and Construction Industry Division, Gosplan USSR, Comrade Nikulin.

"During the first three quarters of last year," declared K. V. Nikulin, "the cement industry overfulfilled its program, but in the fourth quarter the plan of cement output was upset. Neither the overfulfillment achieved in the summer months nor the successes of cementmakers in improving the utilization of existing equipment could rectify the situation: the plan of cement output in the first year of the Seven-Year Plan was fulfilled 99.4 percent -- the State's goal fell short of over 200,000 tons of cement. In the language of builders this signifies that construction and installation operations worth one billion rubles were not supplied with binding material.

"Last year the newly introduced output capacities were smaller than planned to the extent of 2.8 million tons of cement. An analogous situation had existed also in the preceding years: in 1957 the target for introducing new cement-industry capacities was fulfilled only 64 percent, in the following year -- 61 percent, and last year -- 64 percent.

"What then is the reason? Primarily this concerns

the attitude of the heads of construction organizations and local Party organs toward the fulfillment of the plans of the construction of cement-industry enterprises. The construction organizations concerned with building new complexes of the cement industry in Belgorodskiy, Yuzhno-Kazakhstanskiy, Dnepropetrovskiy, and Kemerovskiy sovnarkhozes last year had all acted under the same conditions -- but they obtained different results."

In Belgorod and Chimkent new assemblies in cement plants were activated ahead of schedule, but in Krivoy Rog and Kemerovskaya Oblast their activation was interrupted. The Krivoy Rog people excused themselves by referring to delays in the reception of technical documentation and deliveries of electric-installing equipment. However, as shown by a check-up, the Krivoy Rog people had received technical documentation at the same periods as the Belgorod People. Individual items of electric-installing equipment were not delivered punctually both in Belgorod and in Chimkent. But the oblast and urban Party and economic leaders of the sovnarkhozes and construction sites of Belgorod and Chimkent established efficient control and provided the necessary assistance to a timely conduct of operations, while in Krivoy Rog they had confined themselves to referring to the lack of "individual blueprints and control pushbuttons" and undertook no resolute measures for fulfilling the plan.

At the Nikolayevsk, Belgorod and Chimkent plants, new assemblies, activated ahead of schedule last year, add to production, while in Krivoy Rog, Stalinsk, Yashino, the ambition to accelerate the activation of new capacities has not made itself felt this year either.

It is characteristic that the volume of operations on cement-plant construction sites in relation to the total volume of construction and installation operations, last year, had amounted to 2.3 percent in the Ryazanskiy Sovnarkhoz, 1.6 percent in the Azerbaydzhanskiy Sovnarkhoz and 2.4 percent in the Krasnoyarskiy Sovnarkhoz. No special effort was needed to carry out such volumes of operations. And only indifference toward cement-industry objects can account for the fact that the fulfillment of the plan of construction and installation operations with regard to these objects has been lower than the average for the national economy as a whole. While the fulfillment of the plan for all the construction projects administered by the Ministry of Power Station Construction has amounted to 99.8 percent last year, for the construction of cement plants it amounted to only 61 percent, and in the Ryazanskiy Sovnarkhoz it correspondingly amounted to 94 and 50 percent, respectively, and in the Sovnarkhoz of the

Estonian SSR -- 96 and 73 percent, respectively. One can only be amazed at the shortsightedness of managers who do not comprehend that by delaying the activation of new cement-industry output capacities they, by the same token, obstruct the growth of the construction industry and then reproach the construction organizations for their failure to fulfill plans.

It is necessary for the Party and economic organizations continuously to conduct active measures and constant social control of the course of operations on cement-plant construction sites.

* * *

The success of cement-industry construction hinges greatly on a proper solution of the problems of capital investment planning. The second quarter of this year has begun, but the problems of the financing of many principal construction sites have not yet been resolved.

The vicious practice of the dispersion of funds continues. In order to activate punctually a new facility at the Kuybyshev Cement Plant it is necessary to execute 56 million rubles worth of operations this year, but the Gosplan RSFSR assigned funds totalling only 19.3 million rubles. Other construction sites lack sufficient funds too. The New-Stalinabad Plant needs an additional 15 million rubles, and the Punane-Kunda Plant -- eight million rubles.

Such discrepancies are to be explained by the fact that the compilation of the plan of financing was not based on the actual fulfillment of operations last year. The planners had thought that in the last two or three months of last year the builders would succeed in doubling and tripling their pace and fulfilling the plan. But no such miracle happened. This was already obviously three months ago, but the republic gosplans have not as yet rectified their mistakes.

Many abnormalities exist in the supply of material and technical resources to construction sites. Most notable is the discrepancy between the periods of the commissioning and delivery of equipment and the periods of activation of output capacities. For instance, the order for equipment for the Chernorechensk Plant was placed as long as three years ago, although that plant is to be activated in 1961, whereas the order for equipment for the Akmyansk Plant was placed as late as this year although that plant is to be activated in the fourth quarter of this year.

"Such abnormalities," declared the Chief of the Subsection of Soyuzglavkomplektooborudovaniye /Main Trust for

Complete Sets of Equipment/ Comrade Arsen'yev, at the Conference, "result in our causing difficulties for ourselves. Hitherto no one has established the order of sequence of the provision of technical documentation and deliveries of equipment. This matter is considered neither by Gosplan's Division of Building Materials nor by the same Division of Gosstroy. As long as no such clear order of sequence exists, the claims against the suppliers cannot be completely justified. What reproach could be now addressed to the Uralmashzavod Ural Machine Building Plant which began to send equipment to the Shebelinskiy Cement Plant by delivering chains for kiln screens? Or how could the Sibtyazhmash Siberian Heavy Machinery Plant be reproached? It usually begins by delivering roller supports for kilns, while it sometimes delivers charge grinding assemblies last."

These shortcomings manifest themselves to an equal extent both in domestic and imported deliveries. The orders placed with foreign firms often are not punctually executed, and the provision of the related blueprints is delayed; the Ministry of Foreign Trade does not, as noted by the Conference's participants, apply any sanctions to such firms.

The procurement of equipment for cement plants in the RSFSR is a duty of the Federation's Ministry of Construction. The head of the administration of that Ministry, Comrade Tikhomirov, announced at the Conference:

"This year we are providing complete sets of equipment for 49 technological lines, including 29 lines to be started this year. Twelve such lines should be activated during the first semi-annum, including nine lines still inactive last year. The first quarter has elapsed, but so far only four lines have been provided with complete equipment."

"This year 23 new rotary kilns are to be activated, but only twelve are so far present on the construction sites. Seven of them were not delivered in complete sets, and three others still have not been built. Hitherto no funds have been assigned and in general no orders have been placed for two heavy-duty grinding mills, six grab cranes, ten ventilators, and other equipment."

Other howling neglects were also brought to light at the Conference. The deadlines for delivering equipment for the commissioned technological lines are set at periods later than the deadlines for the activation of these lines. The Soyuzglavtyazhmash /All-Union Main Administration of Heavy Machinery/, e. g., commissioned the delivery of grab cranes for the Vorkuta and Kuznetsk plants for the third quarter of this year, but the activation of output capacities at these plants is envisaged for the second quarter.

The same Soyuzglavtyazhmash had also commissioned drying assemblies for the particularly important "Spartak" cement-plant construction site, for the fourth quarter. But the installation of these assemblies will require two or three months. It is doubtful if over such a period of time the technological lines at the "Spartak" will be activated this year.

The head of the Heavy Machine Building Division of the Gosplan RSFSR Comrade Aleksandrov was justifiably disturbed by the fact that no other branch save for the cement industry follows the procedure of placing orders for special custom-built machine tools or assemblies for delivery within the same year. After all, a machine building plant must not only prepare tools for constructing the commissioned machine but also place orders for accessory equipment with other enterprises.

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During the seven-year period the cement industry should not only grow quantitatively but also become armed with a new and more perfect technology. In the largest enterprises the annual output per worker is scheduled to be raised to 2,500-3,000 tons. However, the cement industry lacks a solid machine-building base. Until very recently the cementmakers obtained the greater part of their equipment from imports. The long intervals between the placements of orders and deliveries of equipment and the construction of equipment far from the sites of its installation have definitely exerted an adverse effect on the perfection of cement-production technology.

Now the situation is changing. The Party and State intend to establish a strong base of domestic cement machine building. For this purpose, the Sibtyazhmash Plant in Krasnoyarsk has been expanded, the Stromnashina Plant in Bryansk is under expansion, and the giant of the cement machine building industry, the Volgotsemtyazhmash Plant, is under construction in Kuybyshevskaya Oblast.

The prospects for that plant can be evaluated from the following comparison. The increment in cement output capacities for this year is set at 6.7 million tons, whereas the Volgotsemtyazhmash Plant alone will annually produce equipment with a productivity of 10 million tons of cement. This will be the "plant of cement plants." However, the Bryanskiy and Kubyshevskiy sovnarkhozes have not as yet manifested proper solicitude about the construction of these plants and the manufacture of cement equipment. This was mentioned at the Conference by the Director of the Stromma-

shina Plant in Bryansk, Comrade Moroshko, and by the Chief of the Planning and Production Division of the Volgotsemtyazhmash Plant, Comrade Sudarikov.

At the end of the last year the Kuybyshevskiy Sovnarkhoz transferred to other plants 22 large metal-cutting machine tools assigned by the State's decision exclusively for the manufacture of cement equipment to the Volgotsemtyazhmash Plant, and moreover 18 of these machine tools were simply removed from their foundations in the shops of that plant.

Machine builders have great pretensions to the allied branches of industry which should deliver to these /cement-equipment/ plants castings, forgings, ventilators, and flues. The Heavy Machine Building Division of the Gosplan RSFSR (Chief: Comrade Aleksandrov) provides little assistance to machine building plants in improving the coordinated inter-sovnarkhoz deliveries.

"The heads of the Strommashina Plant," declared Deputy Chief of the Heavy Machine Building Division of the Gosplan USSR Comrade Rostotskiy, "complain about the non-delivery of castings although two 25-ton open hearth furnaces lie idle at their own plant. The workers of the Bryanskiy Sovnarkhoz seconded the plant's director, but they themselves had not coped with the placement of orders and had failed to provide assistance in the start-up of the steel-smelting assemblies."

Considerable irregularities exist in the equipping of technological lines. The Bryansk Plant should deliver one kiln in June and two in the third quarter, but a part of the accessory equipment was commissioned as late as the fourth quarter. The sovnarkhozes and Gosplan RSFSR should revise the deadlines for the production of individual units so as to coordinate them with the general deadline for delivery of assemblies in complete form.

"The difficulties in the complementation of individual assemblies and entire technological lines," declared Deputy Chairman of Gosstroy USSR Comrade Lebed' in his address, "stem from the fact that the prospects for the development of the cement industry are still unclear. In order to produce 75-81 million tons of cement in 1965 we should activate during the seven-year period capacities designed for an output of approximately 60 million tons. What is the status of the activation of these capacities? Where will they be activated? At what times? Which assemblies? All this has not yet been determined exactly. The Gosplan does not operate with such a broad program. And without it, it is impossible to advance successfully."

For this reason, the Sibtyazhmash Plant does not, as

pointed out by Director Comrade Shibayev, know how many and which kilns it should manufacture.

"Initially we received an assignment for eight kilns and 18 grinding mills," stated F. P. Shibayev, "but now the order was reduced to four kilns and eight mills. The other assemblies were refused by the sovnarkhozes. How can production be planned at our plant if there is no clarity as to the volume of orders?"

The Krivoy Rog Plant was designed for producing portland slag cement by operating on solid fuel, but later on changes had occurred. The new lines at that plant should produce portland cement and operate on gaseous fuel. At the same time, though, the equipment it received was based on the original project /for burning solid fuel/.

"As a result," said Deputy Chief of the Building Materials Division of the Gosplan Ukrainian SSR, Comrade Semenyuk, "the Plant owns six million rubles worth of superfluous imported equipment."

In this connection it should be stated that cement plants accumulate superfluous equipment, especially in coal shops, worth a total of 30 million rubles. However, the Equipment Procurement Division of the Ministry of Construction RSFSR, disregarding this, is placing order /for equipment/ for a new coal shop for the "Spartak" Cement Plant. Such facts are another proof of the weakness of the ties between the equipment procurement agencies and designers.

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At the Conference the Director of the Giprotsement /State Institute for Design and Planning in Cement Industry/ Comrade Lur'ye was sharply criticized. The Giprotsement, being the leading institute for designing cement enterprises, should have drafted a general long-range plan of development of the cement industry involving the determination of the geographical distribution of plants, their output capacities, etc. But it has not carried out this task, although it had plenty of time.

The heads of the Giprotsement do not fulfill their functions as /the heads/ of main institute; they do not coordinate the activities of project-design organizations. The condemned practice of the designing by every institute of its own types of cement plants is still burgeoning. There is no one single standard plant design. Nor is there standard equipment. For instance, the kilns being installed now exist in 12 different type-sizes. Is it not time to unify them?

The drafting of projects for the reconstruction and expansion of old enterprises and construction of new ones has entailed the rooting of the system of issuing technical documentation annually in an approximate proportion to the volume of operations for which funds are assigned. Frequently the chief engineers of the Giprotsement's projects reply to customer plants: "what do you want? We provided you with more documentation that you have yearly assignment of funds." The impression is created that designers are afraid to finish their work for a plant. Sometimes it happens that a plant is under construction for five years while its designing continues throughout all that time. As if otherwise the designers would lack work.

In the procurement of equipment two-thirds of all difficulties occur precisely because of the lack of completed designs and projects and precise specifications for the equipment needed by individual plants. Therefore, orders for machinery and materials are often canceled, sometimes after the machinery has already been constructed; the inventories of the so-called nelikvids /surplus equipment/ are growing. At the same time, new mechanisms and assemblies that were unspecified in previous orders are commissioned. An advance in the pace of project-design work ahead of the pace of construction would mean the discontinuation of the squandering of State funds on orders of unnecessary mechanisms and apparatuses, and a decrease in the cost and time of construction of enterprises.

The Director of the Giprotsement Comrade Lur'ye admitted the shortcomings in his Institute's work. But he tried to justify them by the considerable work burden and by the machine builders' tardiness in sending in blueprints for machinery. However, he remained silent about the fact that ultimately the periods of development of these machines depend on the designers themselves, on that general perspective which they have not yet established. This is clearly a case of stepping on one's own tail and still being surprised at one's inability to get up.

Nor was the business of improving design work clarified by the Deputy Director of the Uyzhgiprotsement /Southern Giprotsement/ Comrade Mikhaylenko. The Director of the Sevkavgiprotsement /Northern Caucasus Giprotsement/ Comrade Gavrilov revealed better than the other designers the true cause of the failures in the drafting of quality projects.

"We are swamped with complaints. There is no standard solution for the type of kiln and composition of other equipment in the plants. This happens because there is no unified supervision. The Giprotsement is subordinated to the Glavstroyproyekt of the Gosstroy USSR, the Yuzhgiprotse-

ment -- to the Gosstroy Ukrainian SSR, we ourselves -- to the Krasnodarskiy Sovnarkhoz, the NIITsemmash -- to the Kuybyshevskiy Sovnarkhoz, and the NIITsement -- to the Gosplan USSR. Each organization labors on its own, separately, and each develops its own ideas. There is a need for a single technical center, for unified supervision of all these organizations."

Many causes of the chronic lag in the activation of new output capacities were revealed at the Conference. Measures were proposed for accelerating the construction of cement plants so that it would actually proceed at a spearheading pace.

The closing address at the Conference was delivered by the Chief of the Construction Section of the CC CPSU, I. A. Grishmanov.

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